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# Implementation of a Surgical Site Infection Bundle at the LVHN Children's Hospital

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## Introduction

Surgical site infections (SSI) are a significant cause of patient harm both during and after hospitalization. The postoperative cost of a patient with a surgical site infection is much greater than the cost of patients without. In efforts to reduce healthcare costs and patient harm, comprehensive bundles have been used at other pediatric surgery programs with measurable reduction in SSI in high-risk surgeries.

## Problem Statement

Do current preoperative protocols align with an evidence-based bundle to prevent SSI in pediatric patients?

## Methodology

Studies evaluating surgical site infections were identified using a PubMed search with MeSH terms conducted in June 2017. High quality systematic reviews were the primary evidence type comprising four of the five bundle elements. In addition, expert consensus guidelines comprised one of the five bundle elements. A retrospective chart review was conducted to evaluate current practices of each bundle component. 50 patients were selected chronologically in November 2017 to represent the most current practices. Included were only patients at LVHN-CC and the Children's Surgery Center, 16 years old and younger, undergoing general and orthopedic surgery.

## Results

Five evidence-based components comprised the SSI bundle: Completion of pre-operative bathing, avoidance of razors for hair removal, use of active perioperative warming (forced air warmer), use of alcohol-containing skin preparation, and proper antibiotic use. Insufficient data was recorded for pre-operative bathing – 52% of patients had missing data in the patient chart. There was 100% compliance with avoidance of razors for hair removal. 36% of patients were actively warmed during the perioperative period with the remaining 64% receiving passive warming. Alcohol-containing skin prep solutions were used in 76% of patients. Antibiotics were timed appropriately in 100% of cases where prophylactic antibiotics were indicated.

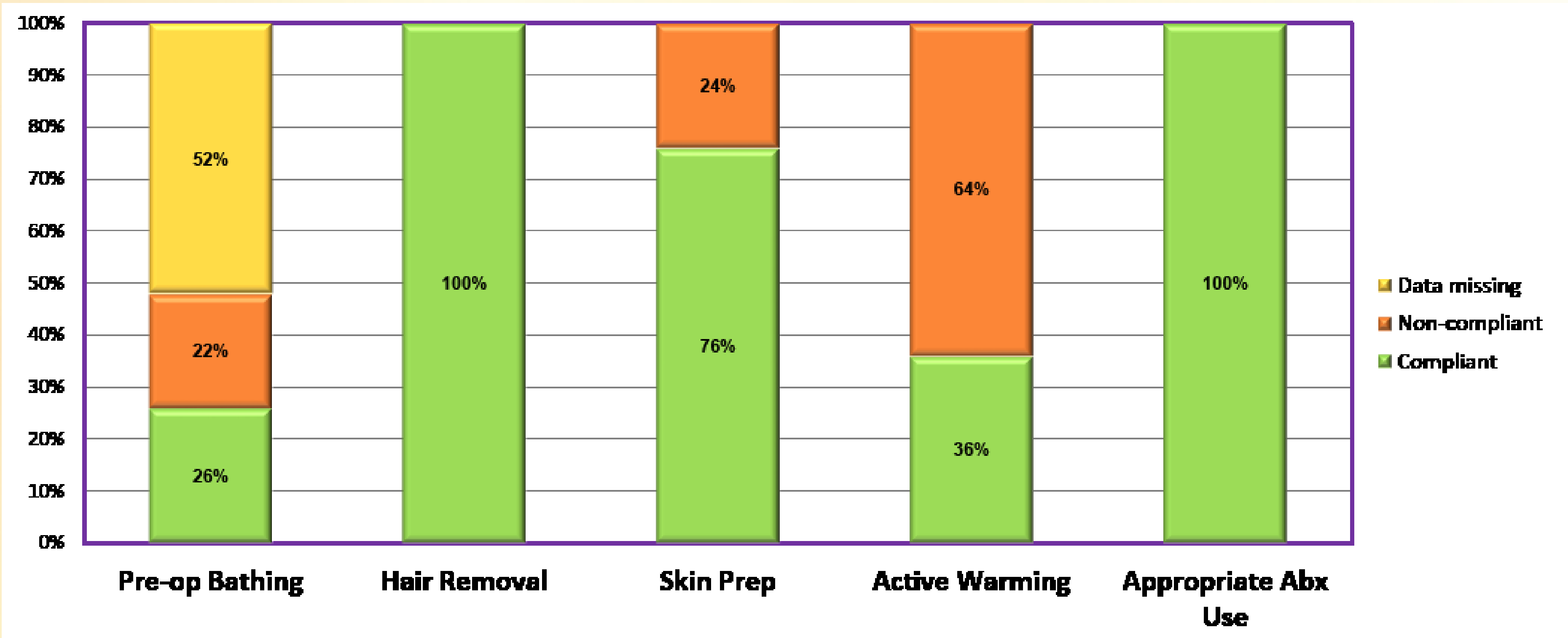
### Surgical Site Infection Bundle LVHN Children's Hospital

Five evidence-based interventions have been identified in an effort to reduce the rate of surgical site infections at the LVHN Children's Hospital for both inpatient and outpatient surgical procedures. These guidelines shall be universal for pediatric operations and may be supplemented with additional interventions if indicated.

- 1. Preoperative shower or bathing<sup>1</sup>**
  - \* All patients should have a full-body shower or bath the night before and the morning of a planned surgical procedure.
  - \* Hospitalized patients should also undergo full-body bathing to whatever extent possible (including bathing wipes if unable to shower/bathe).
  - \* Patients may use any soap or solution that they prefer – no specific solution has been shown to reduce SSI more than another.
- 2. Do not shave prior to operation<sup>2</sup>**
  - \* Removing hair should be avoided if possible.
  - \* If indicated, use clippers in the operating room to remove hair.
  - \* Never use a razor to remove hair preoperatively.
  - \* Patients should be informed to refrain from shaving at least 1 week prior to planned procedures.
- 3. Active perioperative warming<sup>3,4</sup>**
  - \* Patient temperature should be kept at or above 36.1 degrees Celsius.
  - \* Patient warming should be started in preoperative holding using warmed blankets.
  - \* Patient warming should be continued perioperatively, preferably with active warming devices.
- 4. Skin preparation<sup>5</sup>**
  - \* Skin should be prepped using one of many available solutions prior to procedure start.
  - \* Alcohol-containing solutions are preferred.
- 5. Prophylactic Antibiotics<sup>6</sup>**
  - \* Antibiotics used should be in accordance with the LVHN antimicrobial stewardship committee recommendations, which can be found on the LVHN intranet.
  - \* Administration should generally be less than 30 minutes before incision time, with exception of certain antibiotics.
  - \* Antibiotics continued past the time of incision closure do not reduce the rate of SSI.

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SSI Bundle Compliance November 2017



## Conclusions and Future Implications

LVHN Children's Hospital practices align with the current literature and recommendations for pre-operative hair removal and prophylactic antibiotic use. There is opportunity for improvement in use of forced air warmers. Use of alcohol-based solutions for skin preparation may be limited by other factors. Data entry on pre-operative bathing must be improved to make any useful conclusions about compliance. Demonstrated here is the opportunity for continuous improvement of a health system.